

Regional Test Centers for Emerging Solar Technologies Program Overview

Validating Solar Innovation to Power Our Future

The U.S. Department of Energy (DOE) has established five Regional Test Centers (RTCs) in New Mexico, Colorado, Florida, Nevada, and Vermont to demonstrate the bankability of new technologies. Funded by DOE's SunShot Initiative, the RTCs are part of a broad national effort to make solar energy cost-competitive with other forms of electricity by 2020.

The RTCs validate new solar technologies and systems configurations, demonstrating performance and reliability under field conditions over time. Managed by Sandia National Laboratories and the National Renewable Energy Laboratory (NREL), the goal is to demonstrate how a technology performs in a particular climate by:

- Verifying that output power can be accurately predicted
- Quantifying system performance stability
- Identifying climate-specific performance and reliability factors.

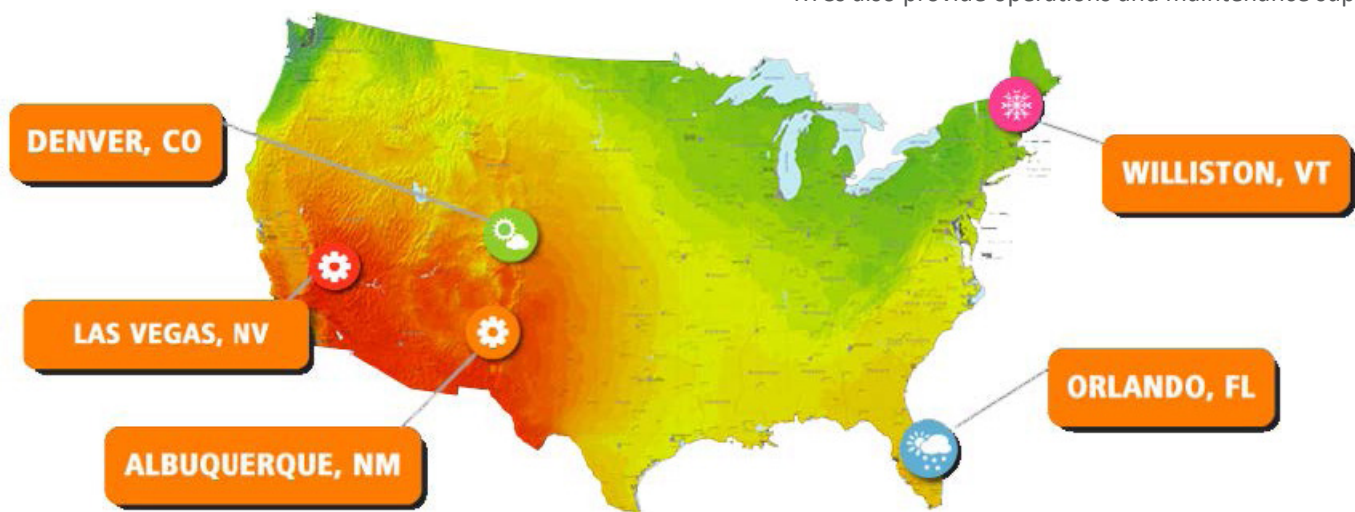
The performance analysis provided by the national laboratories in turn supports the bankability of emerging technologies, and thus helps draw the investment dollars needed to bring innovation to the marketplace.

The exacting validation standards of the RTCs support bankability of emerging products and help increase investor confidence in novel technical approaches.

The RTCs can accommodate multiple solar technologies, including crystalline and thin-film modules: fixed-tilt and tracker systems and advanced (UL and non-UL) electronics. They can also support PV systems ranging in size from 10 to 300 kW and can monitor performance at both the system and component levels.

The RTC program is a collaborative effort:

- Industry partners provide and install prototype technologies that align with RTC goals.
- The RTCs provide grid-tied installation sites and state-of-the-art monitoring and data-acquisition systems. The RTCs also provide operations and maintenance support.



U.S. DOE Regional Test Center Network: five sites across the United States provide high-fidelity performance data across a range of climates, from hot and dry to cold and humid.



NV Regional Test Center: 84 kW Soitec system

- The RTC team, which is made up of solar experts from Sandia and NREL, works with industry partners to design and execute a validation plan, and provides experimental and analytical expertise throughout the life of the project.

The RTC Validation Plan is customized for each partnered project to reflect the partner's technological objectives and describes:

- System design
- Field-based monitoring
- Baseline testing and characterization
- Performance modeling
- Performance data collection and analysis.



CO Regional Test Center: 40 kW Maxim system



VT Regional Test Center: 60 kW c-Si system



NM Regional Test Center: 5 kW Heliovolt system

All data collected from a partner-installed system is considered proprietary and protected by legal agreement.

The RTCs support technological innovation and market acceptance in the U.S. solar sector in multiple ways:

- **Bankability**—The RTC team collects, analyzes, and validates the field-performance data that manufacturers need to gain investor confidence and provides partners with quarterly reports.
- **Product development**—The RTC team provides ongoing performance data reviews and works with partners to improve their technologies.
- **Reliability**—The RTCs can provide partners with access to national laboratory scientists and engineers who have broad solar expertise in areas such as reliability, accelerated testing, materials science and systems modeling.
- **Standards development**—The RTC team is developing replicable and validated methodologies in order to inform and drive standards for bankability.

**For more information
please contact:**

Joshua Stein
Sandia National Laboratories
E-mail: jsstein@sandia.gov

Sarah Kurtz
NREL
E-mail: sarah.kurtz@nrel.gov
Website: rtc.sandia.gov



This work was supported by the U.S. Department of Energy under Contract No. DE-AC36-08-GO28308 with the National Renewable Energy Laboratory.